

H-169

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: April 5, 1979

Forwarded to:  
  
Mr. Robert N. Hunter  
Chief Engineer  
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State Highway Building  
Jefferson City, Missouri 65101

SAFETY RECOMMENDATION(S)  
H-79-20 through -24

At 8:07 p.m. on Sunday, September 25, 1977, an empty tractor-semitrailer was traveling eastbound on I-70 in downtown St. Louis, Missouri, when the truckdriver lost control of his vehicle on wet concrete pavement. The tractor struck, broke, and overrode a concrete median barrier, vaulted into the westbound lanes, and collided with a westbound automobile. All three occupants in the automobile died; the truckdriver was injured slightly. 1/

The Safety Board concluded that the truckdriver lost control of his vehicle between the Delmar Avenue on-ramp and Pine Street/Memorial Drive exit ramp as a result of an evasive maneuver made in response to improper lane changes by another eastbound automobile driver. While an improper lane change was the single factor that began the loss of control sequence, the short weaving section between the ramps and the high operating speed of the truckdriver may have increased the probability for an improper lane change to be made. Safety Board investigators observed many weaving conflicts at the accident site. The St. Louis Police Department reported that 84 accidents had occurred in the vicinity of this accident during calendar year 1977; 60 percent of these accidents occurred on wet pavement. The Missouri State Highway Commission (MSHC) has planned to close the on-ramp in 1980 or 1981, which should reduce the influence of the short weaving section. However, the high accident rate and the high number of weaving conflicts warrant acceleration of this planned action.

1/ For more information read "Highway Accident Report -- Gateway Transportation, Inc., Tractor-Semicrailer and Automobile Collision, I-70, St. Louis, Missouri, September 25, 1977," (NTSB-HAR-79- 3).

The truckdriver lost control on a section of Portland cement concrete that was smooth and traffic-polished with ruts in the wheel paths ranging from 1/16- to 3/16-inch deep in all traffic lanes. The MSHC reported a locked-wheel skid trailer coefficient of friction in the range of 0.25 to 0.30 for that section of roadway, based on tests that were made 25 months before the accident.

Although the Safety Board could not determine if the pavement surface directly contributed to the accident or whether improvements in wet pavement frictional quality would have prevented or reduced the severity of this accident, improved wet pavement frictional quality is known to prevent, or reduce the severity of, accidents on wet pavement. Improvements are normally made either when the measured coefficient of friction falls below a predetermined value or when wet weather accidents are a relatively high percentage of all accidents at a given location, or both.

MSHC policy for correcting pavement surfaces is: "Major emphasis should be developed on wet weather high accident areas occurring on curves, intersections, etc. Any program to resurface existing pavements due to some 'magic' coefficient of friction value without high accidents would be seriously objectionable because of cost." 2/ The Pennsylvania Department of Transportation has had a firm policy since 1975 for correcting pavement surfaces with a coefficient of friction of 0.30 or less. For those locations with at least 35 percent of all accidents related to wet pavement, 3/ this Penn DOT policy states: "Immediate Corrective Action (must be placed on an approved program within one year of date of notification of test results). Corrective action must be completed within the next year following programming, but in no case shall be greater than two years after the date of notification of test results." This policy states that even at locations without significant wet-weather accident history, "Corrective work should be completed as soon as fiscally possible."

According to MSHC policy, there is no coefficient of friction value that would signal the need for corrective action, leaving the driving public unknowingly exposed to a potentially dangerous wet roadway when low values are detected. Accidents must occur in sufficient numbers before corrective measures are taken. This type of policy is contrary to the goals of accident prevention and severity reduction and should be replaced with a more progressive philosophy similar to that of Penn DOT.

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2/ Missouri State Highway Commission Letter of January 27, 1978, to FHWA Docket No. 77-16 -- Skid Accident Reduction Program, Advance Notice of Proposed Rulemaking.

3/ State of Pennsylvania Department of Transportation Letter of February 15, 1978, to FHWA Docket No. 77-16 -- Skid Accident Reduction Program, Advance Notice of Proposed Rulemaking.

There is also some evidence that either the MSHC is not consistently following its own pavement surface improvement policy or its resources for pavement improvement are extremely scarce. Even with a low wet coefficient of friction, a high general accident rate of 84 accidents in a year and a high wet pavement accident rate of 60 percent of all accidents, the MSHC has not improved or scheduled improvement of the pavement surface at this accident site. Therefore, efforts should be directed toward establishing whether: (1) The MSHC is consistently following its own policy, (2) a more progressive policy level is attainable within existing resources, and (3) additional resources are necessary to achieve a progressive policy at a level similar to that of other States. This accident site and other similar sites should be re-analyzed for possible corrective action upon or in conjunction with establishing a new pavement surface improvement policy.

Therefore, the National Transportation Safety Board recommends that the Missouri State Highway Commission:

Accelerate the planned closure of the Delmar Avenue on-ramp on I-70. (Class II, Priority Action) (H-79-20)

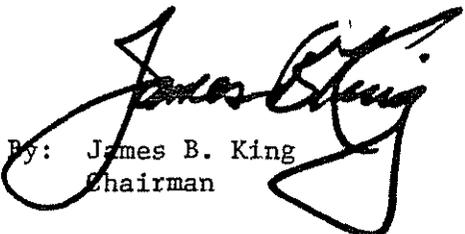
Upon or in conjunction with establishing a new pavement surface improvement policy, re-analyze eastbound I-70 at the Delmar on-ramp and other similar sites for possible corrective action. (Class II, Priority Action) (H-79-21)

Insure that the current MSHC wet pavement surface improvement policy is being consistently followed. (Class II, Priority Action) (H-79-22)

Develop a more progressive wet pavement surface improvement policy that will insure that the driving public is not unknowingly exposed to a potentially dangerous wet roadway when low wet pavement frictional qualities have been detected. (Class II, Priority Action) (H-79-23)

Determine whether additional resources are necessary to attain a wet pavement surface improvement policy level that is consistent with other States. (Class II, Priority Action) (H-79-24)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGU., Members, concurred in the above recommendations.

By:  James B. King  
Chairman